



Blalock, Susan &lt;susan.blalock@deq.virginia.gov&gt;

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**FW: Semi-Monthly Daily LFG Well Temperature and Status Update**

1 message

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**Crystal Bazyk** <crystal.bazyk@deq.virginia.gov>  
To: "Blalock, Susan" <susan.blalock@deq.virginia.gov>

Tue, Aug 16, 2022 at 7:14 AM

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**From:** King, Brandon <BKing@scsengineers.com>**Sent:** Monday, August 15, 2022 4:47 PM**To:** crystal.bazyk@deq.virginia.gov; hall.kristen@epa.gov; jeff.hurst@deq.virginia.gov; willard.erinm@epa.gov; stacy.bowers@deq.virginia.gov; David Cochran <dcochran@bristolva.org>; Randall Eads <CityManager@bristolva.org>; 'mmartin@bristolva.org' (mmartin@bristolva.org) <mmartin@bristolva.org>**Cc:** Warren, Charles <CWarren@scsengineers.com>; Dick, Bob <BDick@scsengineers.com>; Nachman, Lucas <LNachman@scsengineers.com>; Lock, Tom <TLock@scsengineers.com>; Mahon, Ryan <RMahon@scsengineers.com>**Subject:** Semi-Monthly Daily LFG Well Temperature and Status Update

Ms. Hall and Ms. Bazyk,

In accordance with EPA's letter, "Approval of Higher Operating Temperature Values of Landfill Gas Wells and Submission of Gas Treatment Alternatives at the Bristol Virginia Integrated Solid Waste Facility" from August 2021, I am providing the August 15, 2022 status report on the existing wells, expansion of the gas collection system, and continuing operating and monitoring results, covering the period from August 1-15, 2022.

Thank you,

*D. Brandon King**Project Manager*

15521 Midlothian Turnpike, Suite 305

Midlothian, VA 23113

Main 804-378-7440

Direct 804-486-1902

Cell 804-840-7846

**Bimonthly Daily LFG Well Temperature Update\_8-15-22.pdf**

429K



August 15, 2022  
File No. 02218208.04

## MEMORANDUM

TO: Kristin Hall, EPA Region III  
Crystal Bayzk, VDEQ-SWRO

FROM: D. Brandon King, SCS Engineers  
Robert E. Dick, SCS Engineers

SUBJECT: Semi-monthly Status Update – August 1<sup>st</sup> through August 15<sup>th</sup>, 2022  
Bristol Integrated Waste Management Facility, Bristol, Virginia

In accordance with the Environmental Protection Agency (EPA) Region III letter, *Approval of Higher Operating Temperature Values for Landfill Gas Wells and Submission of Gas Treatment Alternatives at the Bristol Virginia Integrated Solid Waste Management Facility*, dated 8/23/21, SCS is submitting this semi-monthly status update to satisfy the condition of compliance provision #2. This compliance provision report includes daily temperature readings of the existing and new wells installed. In addition, this report includes a summary of work accomplished during this reporting period of 8/1/22 through 8/15/22, pursuant of compliance provision #2.

## DAILY TEMPERATURE READINGS

Daily temperature readings were recorded by the City throughout the first half of August and displayed on the attached table. Existing wells GW-31R, GW-37, and GW-47 temperatures have remained between 150F to 160F throughout this reporting period. However, existing well GW-46 exhibited temperatures below 145F during this reporting period. New wells GW-54 and GW-64 continued to record temperatures above 145F during this reporting period. New wells GW-52 and GW-67 recorded temperatures below 145F throughout this reporting period, while GW-50 recorded several 145F readings at the end of this reporting period. SCS has recently made dewatering improvements at the new wells on 8/3-5/22. All other LFG wells recorded temperatures below 145F during the first half of August. SCS conducted the August monthly wellfield monitoring on 8/3/22.

## LFG ANALYTICAL DATA REVIEW

The City and SCS are still awaiting the EPA's evaluation of the Higher Operating Value for Temperature Request letter submitted to EPA on 3/8/22. According to SCS August 2022 LFG monthly wellfield data, exceedance temperatures continue in HOV requested wells GW-31R and GW-37, as well as GW-54. LFG well GW-67 recorded a temperature above 145F on 8/3/22, but below 145F during the 5-day retest conducted on 8/3/22.

Wells GW-31R and GW-37 recorded temperatures of 158F and 156F respectively by SCS on 8/3/22. Well GW-54 recorded a temperature of 153F by SCS on 8/3/22. SCS recorded a CO sample via 1.5L Summa Canister at wells GW-31R, GW-37, and GW-54 on 8/3/22. GW-31R recorded a CO concentration of 200 ppm, while existing well GW-37 and new well GW-54 recorded CO readings below the detection limit of 90 ppm. None of the concentrations recorded show evidence of a subsurface fire. The results of the CO sampling events are included for reference.



## NON-ROUTINE O&M

City personnel have been hauling cover soil into Permit #588 Landfill and spreading over exposed areas of waste in non-active filling areas during the first half of August. The City's Street Department allocated several dump trucks to stockpile soil at a staging area at the north end of the Permit #588 Landfill, which is moved by the Facility to the south end and spread over non-active filling areas. The only non-active filling areas yet to receive cover soil are the areas where the LFG laterals, pneumatic airline and dewatering forcemain traverse aboveground. The City's O&M contractor is currently on-site during the week of 8/15/22 to collaborate with the City to move the lines and allow the City to apply cover soil to these areas.

SCS Field Services (FS) O&M mobilized to the Facility from 8/3-5/22 to pull select dewatering pumps from LFG wells for inspection, cleaning or replace pump as needed, and test the pneumatic pump to confirm operational status prior to installing back in the well. SCS-FS O&M targeted pump cleaning activities were based on results of the pump cycle counter data. SCS-FS had success returning pumps to operational status by relieving pressure on the dewatering forcemain during 8/3-5/22 O&M activities.

## EVALUATION OF LFG SYSTEM

The City is equipped with several functional dedicated pneumatic dewatering pumps available on standby to be switched out in the event a well has a non-functioning pump. The City has set up a dedicated pump cleaning and testing station allowing SCS-FS O&M access to the City's wash bay. This includes an air compressor from a service truck and a water barrel to test the pneumatic pumps to satisfy this need from O&M. SCS-FS O&M will continue to use this testing and cleaning station to clean select pumps based on cycle counter data.

SCS has begun weekly surface emissions monitoring per the Plan of Action Report dated 7/6/22. SCS and the City are collaborating to procure and place foam seals around LFG wells with elevated surface emissions around the pipe penetration followed by compacted cover soil to control migrating gas and odors. O&M and the City will continue to work together to move the lateral, air, and forcemain to apply cover soil in the areas under those lines to control fugitive emissions.

SCS Engineers understands the south end leachate cleanouts are connected to the existing LFG System from a pilot-scale collection system SCS installed on behalf of Ingenco in 2020. SCS is assessing the south end cleanouts to possibly be upgraded with a larger LFG header to increase the volume of LFG collected from these south end cleanouts. SCS is currently coordinating with the City on the design and construction of these modifications.

Please contact SCS or City personnel if you have any questions or require additional information.

cc: Randall Eads, City of Bristol  
Michael Maine, City of Bristol  
Jeff Hurst, VDEQ-SWRO  
Tom Lock, SCS Field Services

David Cochran, City of Bristol  
Erin Willard, EPA Region III  
Stacy Bowers, VDEQ-SWRO  
Robert E. Dick, P.E., SCS Engineers

Note	Well Depth	Date Drill	Phase	Month	August	August	August	August	August	August	August	August	August	August	August	August	August	August	August
				Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday
				Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
				Well Number															
1	102	10/16/2016	Old Well	35	80	80	80	75	80	80	80	89	89	86	80	80	82	80	80
2	70	9/6/2017	Old Well	39	110	115	110	110	110	110	110	115	115	112	115	110	118	120	80
3	100	9/7/2017	Old Well	40	110	110	110	100	110	115	110	110	110	111	110	110	104	110	110
4	110	10/4/2016	Old Well	46	135	125	130	110	115	110	110	110	110	110	120	115	130	135	110
5	120	10/4/2016	Old Well	47	155	155	160	155	155	160	155	160	155	158	160	160	158	160	147
6	120	9/17/2013	Old Well	29	110	110	115	110	115	115	115	115	110	111	120	115	120	124	115
7	100	8/23/2017	Old Well	30R	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	138	124	Too Tall
8	120	8/30/2017	Old Well	31R	155	150	155	155	160	153	155	155	155	152	160	160	160	155	160
9	70	7/29/2016	Old Well	32	80	75	75	80	75	75	75	80	75	75	75	75	Too Tall	Too Tall	75
10	100	7/28/2016	Old Well	33	120	120	120	120	120	120	120	120	120	120	120	120	129	132	120
11	100	7/30/2016	Old Well	34	120	120	120	110	120	120	120	105	100	102	105	80	92	96	85
12	100	8/1/2016	Old Well	36	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	96	96	Too Tall
13	100	8/24/2017	Old Well	37	155	150	150	150	155	150	150	150	160	157	160	160	150	145	155
14	50	8/25/2017	Old Well	38	100	90	150	105	105	105	105	110	110	110	115	115	129	120	115
15	75	9/8/2017	Old Well	41	120	130	120	140	135	135	130	140	130	128	140	140	140	138	135
16	57	9/8/2017	Old Well	42	120	110	120	120	120	120	120	120	120	114	120	125	120	120	120
17	110	10/7/2016	Old Well	48	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	82	80	Too Tall
1	120	10/1/2021	New Well	32R	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall
2	110	10/1/2021	New Well	49	130	120	140	135	140	135	135	130	135	133	135	135	Too Tall	Too Tall	130
3	96	10/1/2021	New Well	50	140	140	140	140	140	140	140	140	140	142	145	145	142	140	145
4	114	10/1/2021	New Well	51	110	100	110	100	100	100	100	NM	120	124	110	115	118	120	Too Tall
5	109	10/1/2021	New Well	52	140	135	NM	110	130	120	115	115	115	116	120	120	120	115	105
6	91	10/1/2021	New Well	53	90	85	105	100	NM	100	105	105	110	100	115	115	Too Tall	Too Tall	110
7	91	10/1/2021	New Well	54	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall	Too Tall
8	104	10/1/2021	New Well	55	80	80	80	80	80	80	80	75	80	92	80	70	78	80	100
9	109	10/1/2021	New Well	56	140	140	NM	NM	NM	140	140	NM	135	138	140	140	142	140	135
10	103	10/1/2021	New Well	57	140	140	140	140	140	140	140	140	135	132	135	140	142	140	135
11	92	10/1/2021	New Well	58	135	130	NM	125	125	120	125	130	130	130	130	140	138	135	125
12	72	10/1/2021	New Well	59	120	120	NM	120	120	120	120	115	115	112	NM	115	120	128	120
13	120	10/1/2021	New Well	60	140	130	125	130	130	130	130	135	135	134	135	130	130	140	110
14	105	10/1/2021	New Well	61	105	105	105	105	105	105	105	115	110	112	120	120	118	122	110
15	120	10/1/2021	New Well	62	120	120	120	110	120	120	120	120	120	115	120	120	122	125	120
16	117	10/1/2021	New Well	63	130	120	130	130	130	130	130	130	130	130	130	130	138	132	135
17	120	10/1/2021	New Well	64	145	140	145	140	145	140	145	140	145	143	145	150	144	140	145
18	100	10/1/2021	New Well	65	140	125	130	130	130	130	130	125	130	132	130	120	130	122	130
19	102	10/1/2021	New Well	66	140	140	140	140	140	140	140	140	140	140	140	140	Too Tall	Too Tall	130
20	100	10/1/2021	New Well	67	140	140	140	140	140	140	140	135	140	135	140	140	Too Tall	Too Tall	Too Tall
21	75	10/1/2021	New Well	68	120	120	130	120	120	120	120	120	125	132	125	125	134	132	110



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## Certificate of Analysis

### *Final Report*

Laboratory Order ID 22H0342

Client Name:	SCS Field Services - Harrisburg, PA	Date Received:	August 5, 2022 9:47
	4330 Lewis Road, Suite 1	Date Issued:	August 12, 2022 12:00
	Harrisburg, PA 17111	Project Number:	[none]
Submitted To:	Mike Gibbons	Purchase Order:	
Client Site I.D.:	Bristol		

Enclosed are the results of analyses for samples received by the laboratory on 08/05/2022 09:47. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

A handwritten signature in black ink that reads 'Ted Soyars'.

Ted Soyars  
Technical Director

#### End Notes:

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

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## Certificate of Analysis

### *Final Report*

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4330 Lewis Road, Suite 1      Date Issued: August 12, 2022 12:00  
  
Harrisburg, PA 17111      Project Number: [none]  
Submitted To: Mike Gibbons      Purchase Order:  
  
Client Site I.D.: Bristol

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
31R	22H0342-01	Air	08/03/2022 14:23	08/05/2022 09:47
37	22H0342-02	Air	08/03/2022 14:30	08/05/2022 09:47
54	22H0342-03	Air	08/03/2022 14:04	08/05/2022 09:47



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4330 Lewis Road, Suite 1

Date Received: August 5, 2022 9:47  
Date Issued: August 12, 2022 12:00

Harrisburg, PA 17111

Submitted To: Mike Gibbons

Project Number: [none]

Client Site I.D.: Bristol

Purchase Order:

### ANALYTICAL RESULTS

Project Location:

Sample Description/Location:

Initial Vacuum(in Hg): 30

Field Sample #: 31R

Sub Description/Location:

Final Vacuum(in Hg): 4.6

Sample ID: 22H0342-01

Canister ID: 063-00258: 12420

Receipt Vacuum(in Hg): 4.6

Sample Matrix: Air

Canister Size: 1.4

Flow Controller Type: Passive

Sampled: 8/3/2022 14:23

Flow Controller ID:

Sample Type: LG

#### Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	ppmv			Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
	Result	MDL	LOQ					
Carbon Monoxide, as received	200	90.0	90.0		9	1	8/10/22 11:37	DFH





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Date Issued: August 12, 2022 12:00

Harrisburg, PA 17111

Submitted To: Mike Gibbons

Project Number: [none]

Client Site I.D.: Bristol

Purchase Order:

### ANALYTICAL RESULTS

Project Location:

Sample Description/Location:

Initial Vacuum(in Hg): 30

Field Sample #: 37

Sub Description/Location:

Final Vacuum(in Hg): 4.0

Sample ID: 22H0342-02

Canister ID: 063-00250: 12666

Receipt Vacuum(in Hg): 4.0

Sample Matrix: Air

Canister Size: 1.4

Flow Controller Type: Passive

Sampled: 8/3/2022 14:30

Flow Controller ID:

Sample Type: LG

#### Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	ppmv			Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
	Result	MDL	LOQ					
Carbon Monoxide, as received	ND	90.0	90.0		9	1	8/10/22 12:31	DFH



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Harrisburg, PA 17111

Submitted To: Mike Gibbons

Project Number: [none]

Client Site I.D.: Bristol

Purchase Order:

### ANALYTICAL RESULTS

Project Location:

Sample Description/Location:

Initial Vacuum(in Hg): 30

Field Sample #: 54

Sub Description/Location:

Final Vacuum(in Hg): 4.4

Sample ID: 22H0342-03

Canister ID: 063-00305: 10044

Receipt Vacuum(in Hg): 4.4

Sample Matrix: Air

Canister Size: 1.4

Flow Controller Type: Passive

Sampled: 8/3/2022 14:04

Flow Controller ID:

Sample Type: LG

#### Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis ALT-145

Analyte	ppmv			Flag/Qual	Dilution	PF	Date/Time Analyzed	Analyst
	Result	MDL	LOQ					
Carbon Monoxide, as received	ND	90.0	90.0		9	1	8/10/22 13:24	DFH



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Harrisburg, PA 17111

Submitted To: Mike Gibbons

Project Number: [none]

Client Site I.D.: Bristol

Purchase Order:

### Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis			Preparation Method:	No Prep VOC GC Air	
22H0342-01	1.00 mL / 1.00 mL	ALT-145	BFH0211	SFH0350	AG00026
22H0342-02	1.00 mL / 1.00 mL	ALT-145	BFH0211	SFH0350	AG00026
22H0342-03	1.00 mL / 1.00 mL	ALT-145	BFH0211	SFH0350	AG00026



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Project Number: [none]

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Purchase Order:

### Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control

#### Enthalpy Analytical

Analyte	Reporting Result	Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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#### Batch BFH0211 - No Prep VOC GC Air

##### Blank (BFH0211-BLK1)

Prepared & Analyzed: 08/05/2022

Carbon Monoxide < 10.0 ppmv

##### LCS (BFH0211-BS1)

Prepared & Analyzed: 08/05/2022

Methane	4310	500	ppmv	5000	86.1	0-200
Carbon dioxide	3660	500	ppmv	5000	73.1	0-200
Oxygen (O2)	4960	500	ppmv	5000	99.1	0-200
Nitrogen (N2)	5410	2000	ppmv	5000	108	0-200
Hydrogen (H2)	5460	200	ppmv	5100	107	0-200
Carbon Monoxide	4710	10	ppmv	5000	94.1	0-200

##### Duplicate (BFH0211-DUP1)

Source: 22H0001-01

Prepared & Analyzed: 08/05/2022

Methane	<	4500	ppmv	<4500	NA	25
Carbon dioxide	204000	4500	ppmv	203000	0.350	25
Oxygen (O2)	144000	4500	ppmv	143000	0.425	25
Nitrogen (N2)	515000	18000	ppmv	513000	0.428	25
Hydrogen (H2)	64300	1800	ppmv	64000	0.455	25
Carbon Monoxide	408	90.0	ppmv	414	1.45	25

##### Duplicate (BFH0211-DUP2)

Source: 22H0257-01

Prepared: 08/05/2022 Analyzed: 08/09/2022

Methane	44000	4500	ppmv	43600	0.787	25
Carbon dioxide	686000	4500	ppmv	683000	0.366	25
Oxygen (O2)	<	4500	ppmv	<4500	NA	25
Nitrogen (N2)	<	18000	ppmv	<18000	NA	25
Hydrogen (H2)	166000	1800	ppmv	166000	0.162	25
Carbon Monoxide	977	90.0	ppmv	976	0.120	25

##### Duplicate (BFH0211-DUP3)

Source: 22H0257-02

Prepared: 08/05/2022 Analyzed: 08/09/2022

Methane	200000	4500	ppmv	199000	0.435	25
Carbon dioxide	530000	4500	ppmv	530000	0.125	25
Oxygen (O2)	<	4500	ppmv	<4500	NA	25
Hydrogen (H2)	128000	1800	ppmv	128000	0.0953	25
Nitrogen (N2)	<	18000	ppmv	<18000	NA	25
Carbon Monoxide	777	90.0	ppmv	772	0.569	25



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4330 Lewis Road, Suite 1

Date Received: August 5, 2022 9:47  
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Harrisburg, PA 17111

Submitted To: Mike Gibbons

Project Number: [none]

Client Site I.D.: Bristol

Purchase Order:

**Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control**

### Enthalpy Analytical

Analyte	Reporting			Spike Level	Source Result	%REC			RPD		Qual
	Result	Limit	Units			%REC	Limits	RPD	Limit		

#### Batch BFH0211 - No Prep VOC GC Air

Duplicate (BFH0211-DUP4)				Source: 22H0257-03		Prepared: 08/05/2022 Analyzed: 08/09/2022				
Methane	103000	4500	ppmv			104000	0.661	25		
Carbon dioxide	626000	4500	ppmv			638000	1.98	25		
Oxygen (O2)	<	4500	ppmv			<4500	NA	25		
Nitrogen (N2)	<	18000	ppmv			<18000	NA	25		
Hydrogen (H2)	157000	1800	ppmv			157000	0.0145	25		
Carbon Monoxide	1060	90.0	ppmv			1060	0.519	25		

Duplicate (BFH0211-DUP5)				Source: 22H0257-04		Prepared: 08/05/2022 Analyzed: 08/09/2022				
Methane	150000	4500	ppmv			150000	0.397	25		
Carbon dioxide	515000	4500	ppmv			519000	0.713	25		
Oxygen (O2)	<	4500	ppmv			<4500	NA	25		
Hydrogen (H2)	237000	1800	ppmv			238000	0.547	25		
Nitrogen (N2)	<	18000	ppmv			<18000	NA	25		
Carbon Monoxide	640	90.0	ppmv			637	0.521	25		

Duplicate (BFH0211-DUP6)				Source: 22H0259-01		Prepared: 08/05/2022 Analyzed: 08/09/2022				
Methane	360000	4500	ppmv			352000	2.27	25		
Carbon dioxide	377000	4500	ppmv			366000	2.82	25		
Oxygen (O2)	<	4500	ppmv			<4500	NA	25		
Hydrogen (H2)	87900	1800	ppmv			85500	2.80	25		
Nitrogen (N2)	55000	18000	ppmv			53700	2.41	25		
Carbon Monoxide	109	90.0	ppmv			108	0.166	25		

Duplicate (BFH0211-DUP7)				Source: 22H0259-02		Prepared: 08/05/2022 Analyzed: 08/09/2022				
Methane	297000	4500	ppmv			300000	1.11	25		
Carbon dioxide	265000	4500	ppmv			269000	1.20	25		
Oxygen (O2)	<	4500	ppmv			<4500	NA	25		
Nitrogen (N2)	243000	18000	ppmv			246000	1.22	25		
Hydrogen (H2)	42000	1800	ppmv			42900	2.17	25		
Carbon Monoxide	<	90.0	ppmv			<90.0	NA	25		



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## Certificate of Analysis

Final Report

Laboratory Order ID 22H0342

Client Name: SCS Field Services - Harrisburg, PA  
4330 Lewis Road, Suite 1

Date Received: August 5, 2022 9:47  
Date Issued: August 12, 2022 12:00

Harrisburg, PA 17111

Submitted To: Mike Gibbons

Project Number: [none]

Client Site I.D.: Bristol

Purchase Order:

**Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control**

### Enthalpy Analytical

Analyte	Reporting			Spike Level	Source Result	%REC			RPD		Qual
	Result	Limit	Units			%REC	Limits	RPD	Limit		

#### Batch BFH0211 - No Prep VOC GC Air

Duplicate (BFH0211-DUP8)				Source: 22H0259-03		Prepared: 08/05/2022 Analyzed: 08/09/2022				
Methane	459000	4500	ppmv		457000		0.631		25	
Carbon dioxide	362000	4500	ppmv		355000		2.04		25	
Oxygen (O2)	<	4500	ppmv		<4500		NA		25	
Hydrogen (H2)	17800	1800	ppmv		17900		0.287		25	
Nitrogen (N2)	<	18000	ppmv		<18000		NA		25	
Carbon Monoxide	<	90.0	ppmv		<90.0		NA		25	

Duplicate (BFH0211-DUP9)				Source: 22H0261-01		Prepared & Analyzed: 08/10/2022				
Methane	185000	4500	ppmv		187000		1.15		25	
Carbon dioxide	365000	4500	ppmv		369000		0.984		25	
Oxygen (O2)	17800	4500	ppmv		17900		0.979		25	
Nitrogen (N2)	133000	18000	ppmv		134000		1.04		25	
Hydrogen (H2)	211000	1800	ppmv		212000		0.680		25	
Carbon Monoxide	367	90.0	ppmv		372		1.32		25	

Duplicate (BFH0211-DUPA)				Source: 22H0261-02		Prepared & Analyzed: 08/10/2022				
Methane	303000	4500	ppmv		307000		1.23		25	
Carbon dioxide	354000	4500	ppmv		358000		1.30		25	
Oxygen (O2)	9740	4500	ppmv		9910		1.66		25	
Hydrogen (H2)	122000	1800	ppmv		123000		0.940		25	
Nitrogen (N2)	80200	18000	ppmv		81200		1.32		25	
Carbon Monoxide	109	90.0	ppmv		109		0.495		25	

Duplicate (BFH0211-DUPB)				Source: 22H0342-01		Prepared & Analyzed: 08/10/2022				
Methane	261000	4500	ppmv		257000		1.61		25	
Carbon dioxide	519000	4500	ppmv		511000		1.47		25	
Oxygen (O2)	13200	4500	ppmv		12800		2.85		25	
Nitrogen (N2)	88900	18000	ppmv		87400		1.62		25	
Hydrogen (H2)	29800	1800	ppmv		29500		0.881		25	
Carbon Monoxide	192	90.0	ppmv		200		4.03		25	



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Project Number: [none]

Client Site I.D.: Bristol

Purchase Order:

**Volatile Organic Compounds by GC/TCD - Unadjusted, as received basis - Quality Control**

### Enthalpy Analytical

Analyte	Reporting			Spike Level	Source Result	%REC		RPD		Qual
	Result	Limit	Units			%REC	Limits	RPD	Limit	

#### Batch BFH0211 - No Prep VOC GC Air

Duplicate (BFH0211-DUPC)				Source: 22H0342-02		Prepared & Analyzed: 08/10/2022				
Methane	153000	4500	ppmv			154000	0.637		25	
Carbon dioxide	224000	4500	ppmv			226000	0.607		25	
Oxygen (O2)	61900	4500	ppmv			62300	0.555		25	
Hydrogen (H2)	7910	1800	ppmv			7790	1.51		25	
Nitrogen (N2)	420000	18000	ppmv			423000	0.602		25	
Carbon Monoxide	<	90.0	ppmv			<90.0	NA		25	

Duplicate (BFH0211-DUPD)				Source: 22H0342-03		Prepared & Analyzed: 08/10/2022				
Methane	307000	4500	ppmv			307000	0.0609		25	
Carbon dioxide	324000	4500	ppmv			324000	0.00638		25	
Oxygen (O2)	22300	4500	ppmv			22300	0.184		25	
Nitrogen (N2)	225000	18000	ppmv			225000	0.0529		25	
Hydrogen (H2)	8350	1800	ppmv			8360	0.111		25	
Carbon Monoxide	<	90.0	ppmv			<90.0	NA		25	

Duplicate (BFH0211-DUPE)				Source: 22H0628-01		Prepared: 08/11/2022 Analyzed: 08/12/2022				
Methane	469000	4500	ppmv			467000	0.468		25	
Carbon dioxide	378000	4500	ppmv			380000	0.504		25	
Oxygen (O2)	<	4500	ppmv			<4500	NA		25	
Hydrogen (H2)	14300	1800	ppmv			14500	1.46		25	
Nitrogen (N2)	<	18000	ppmv			<18000	NA		25	
Carbon Monoxide	<	90.0	ppmv			<90.0	NA		25	

#### Certified Analytes included in this Report

Analyte	Certifications	Analyte	Certifications
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## Certificate of Analysis

Final Report

Laboratory Order ID 22H0342

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4330 Lewis Road, Suite 1

Date Received: August 5, 2022 9:47  
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Harrisburg, PA 17111

Submitted To: Mike Gibbons

Project Number: [none]

Client Site I.D.: Bristol

Purchase Order:

Code	Description	Laboratory ID	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2022
NCDEQ	North Carolina DEQ	495	12/31/2022
NYDOH	New York DOH Drinking Water	12096	04/01/2023
PADEP	NELAP-Pennsylvania Certificate #007	68-03503	10/31/2022
VELAP	NELAP-Virginia Certificate #11900	460021	06/14/2023
WVDEP	West Virginia DEP	350	11/30/2022

### Qualifiers and Definitions

RPD	Relative Percent Difference
Qual	Qualifiers
-RE	Denotes sample was re-analyzed
PF	Preparation Factor
MDL	Method Detection Limit
LOQ	Limit of Quantitation
ppbv	parts per billion by volume

TIC Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.

All EPA method 3C results are reported as normalized values when the sum total of all evaluated constituents is outside  $\pm 10\%$  of the absolute.



ADDRESS: \_\_\_\_\_ INVOICE ADDRESS: \_\_\_\_\_ PROJECT NUMBER: \_\_\_\_\_

PHONE #: \_\_\_\_\_ INVOICE PHONE #: \_\_\_\_\_ P.O. #: \_\_\_\_\_

FAX #: \_\_\_\_\_ EMAIL: \_\_\_\_\_ Pretreatment Program: \_\_\_\_\_

Is sample for compliance reporting? YES NO Regulatory State: VA Is sample from a chlorinated supply? YES NO PW \_\_\_\_\_

SAMPLER NAME (PRINT): Ryan Seymour SAMPLER SIGNATURE: Ryan Seymour Turn Around Time: \_\_\_\_\_

Matrix Codes: AA=Indoor/Ambient Air SG=Soil Gas LV=Landfill/Vent Gas OT=Other \_\_\_\_\_ 063-22G-0017

CLIENT SAMPLE I.D.	Regulator Info		Canister Information					Sampling Start Information				Sampling Stop Information	
	Flow Controller ID	Cal Flow (mL/min)	Canister ID	Size (L)	Cleaning Batch ID	LAB Outgoing Canister Vacuum (in Hg)	LAB Receiving Canister Vacuum (in Hg)	Barometric Pres. (in Hg):				Barometric Pres. (in Hg):	
								Start Date	Start Time (24hr clock)	Initial Canister Vacuum (in Hg)	Starting Sample Temp °F	Stop Date	Stop Time (24hr clock)
1) 31R			12420 11307	1.4	220713-02		4.6	8/3/22	14:22		156°	8/3/22	14:23
2) 37			12666	1.4	220713-02		4.0	8/3/22	14:28		152°	8/3/22	14:30
3) 54			16044		220713-02		4.4	8/3/22	14:03		152°	8/03/22	14:04
4)													

Page 12 of 13

INQUIRED: <u>Ryan Seymour</u>	DATE / TIME	RECEIVED: _____	DATE / TIME	QC Data Package	LAB USE ONLY
INQUIRED: _____	DATE / TIME	RECEIVED: _____	DATE / TIME	Level I <input type="checkbox"/>	310
INQUIRED: _____	DATE / TIME	RECEIVED: _____	DATE / TIME	Level II <input type="checkbox"/>	20.8°C
INQUIRED: _____	DATE / TIME	RECEIVED: _____	DATE / TIME	Level III <input type="checkbox"/>	no ice
INQUIRED: _____	DATE / TIME	RECEIVED: _____	DATE / TIME	Level IV <input type="checkbox"/>	no water

SCS Bristol Recd: 22H0342